

THE INVENTION CLAIMED IS

1. A method of removing a metal from a substrate comprising:

5 providing a substrate having metal formed thereon;

contacting the substrate with a reactive surface comprising a first complexing agent; and

removing metal particles from the substrate via bonding between the metal and the first complexing agent.

10

2. The method of claim 1 wherein providing a substrate comprises providing a semiconductor substrate having a metal formed thereon.

15 3. The method of claim 1 wherein providing a substrate having a metal formed thereon comprises providing a substrate having a metal compound formed thereon.

20 4. The method of claim 3 wherein the metal compound comprises a metal oxide.

25 5. The method of claim 1 further comprising: cleaning the reactive surface via applying a second complexing agent that is stronger than the first complexing agent to thereby remove metal particles from the reactive surface.

30 6. The method of claim 5 wherein cleaning the reactive surface via applying a second complexing agent comprises cleaning the reactive surface via applying a second complexing agent comprising ammonium hydroxide, ammonia or carboxylic acid.

7. The method of claim 1 further comprising:
cleaning the reactive surface by electrically
biasing the reactive surface.

5 8. The method of claim 7 wherein electrically
biasing the reactive surface comprises:
placing a metal disk on the reactive surface;
and
applying a bias between the metal disk and the
10 reactive surface.

9. The method of claim 1 further comprising:
cleaning the reactive surface with sulfuric
acid.

10. The method of claim 1 further comprising:
removing a layer of the reactive surface with
a conditioning head to thereby remove the layer of the
reactive surface and to expose a new layer of reactive
20 surface.

11. The method of claim 1 wherein contacting the
substrate with a reactive surface comprising a first
complexing agent comprises contacting the substrate with a
25 reactive surface comprising a first complexing agent
comprising a bispicolylamine functionality, an amine, a
carboxilate, a chloride or a sulfonate.

12. The method of claim 1 wherein the first
30 complexing agent is solid material attached to the reactive
surface.

13. The method of claim 12 wherein the complexing agent is attached to the reactive surface by one of bonding, grafting and blending.

5 14. A brush apparatus comprising:
 a scrubber brush having:
 a surface adapted to contact a surface of
a substrate to be scrubbed; and
 a complexing agent coupled to the
10 scrubber brush surface, the complexing agent adapted to bond
to metal particles.

15 15. The apparatus of claim 14 wherein the
complexing agent is adapted to bond to a metal compound.

 16. The apparatus of claim 15 wherein the metal
compound is a metal oxide.

20 17. The apparatus of claim 14 wherein the
complexing agent is a solid material attached to the scrubber
brush surface.

25 18. The apparatus of claim 17 wherein the
complexing agent is attached to the scrubber brush surface by
one of bonding, grafting and blending.

 19. An apparatus comprising:
 a scrubber brush comprised of a homogeneous
material comprising a complexing agent adapted to bond to
30 metal particles, and having a surface adapted to contact a
surface of a substrate to be scrubbed.

 20. A scrubber comprising:

a substrate support adapted to support a substrate;

a brush coupled so as to contact a substrate supported by the substrate support, the brush having:

5 a surface adapted to contact a surface of a substrate to be scrubbed; and

a complexing agent coupled to the scrubber brush surface, the complexing agent adapted to bond to metal particles; and

10 a mechanism adapted to generate relative movement between the substrate and the brush apparatus.

21. A method of regenerating a scrubber brush, comprising:

15 providing a scrubber brush having a reactive surface comprising a first complexing agent to which metal particles have bonded; and

20 cleaning the reactive surface by applying a second complexing agent that is stronger than the first complexing agent to thereby remove at least some of the metal particles from the reactive surface.

22. The method of claim 21 wherein the second complexing agent is ammonium hydroxide, ammonia or carboxylic acid.

23. A method of regenerating a polishing pad, comprising:

30 providing a polishing pad having a reactive surface comprising a first complexing agent to which metal particles have bonded; and

cleaning the reactive surface by applying a second complexing agent that is stronger than the first

complexing agent to thereby remove at least some of the metal particles from the reactive surface.

24. The method of claim 23 wherein the second
5 complexing agent is ammonium hydroxide, ammonia or carboxylic acid.

25. A method of regenerating a polishing pad,
comprising:

10 providing a polishing pad having a reactive surface comprising a complexing agent to which metal particles have bonded; and

removing a layer of the reactive surface with
a conditioning head to expose a new layer of reactive
15 surface.

26. A method of regenerating a scrubber brush,
comprising:

20 providing a scrubber brush having a reactive surface comprising a first complexing agent to which metal particles have bonded; and

cleaning the reactive surface by electrically
biasing the reactive surface.

25 27. The method of claim 26 wherein electrically biasing the reactive surface comprises:

placing a conductive material on the reactive
surface; and

30 applying a bias between the conductive material and the reactive surface.

28. A method of regenerating a polishing pad,
comprising:

providing a polishing pad having a reactive surface comprising a first complexing agent to which metal particles have bonded; and

cleaning the reactive surface by electrically
5 biasing the reactive surface.

29. The method of claim 28 wherein applying a bias comprises:

placing a conductive material on the reactive
10 surface; and

applying a bias between the conductive material and the reactive surface.

30. The method of claim 29 wherein the conductive
15 material is part of a conditioning head.

31. A method of regenerating a scrubber brush, comprising:

providing a scrubber brush having a reactive
20 surface comprising a first complexing agent to which metal particles have bonded; and

cleaning the reactive surface with a strong acid to thereby remove at least some of the metal particles from the reactive surface.

25 32. The method of claim 31 wherein the strong acid is sulfuric acid.

33 . A method of regenerating a polishing pad,
30 comprising:

providing a polishing pad having a reactive surface comprising a first complexing agent to which metal particles have bonded; and

cleaning the reactive surface with a strong acid to thereby remove at least some of the metal particles from the reactive surface.